

MISSISSIPPI DEPARTMENT OF  
ENVIRONMENTAL QUALITY  
OFFICE OF GEOLOGY  
OPEN-FILE REPORT 309

# GEOLOGIC MAP of the RATLIFF QUADRANGLE Lee, Itawamba, and Prentiss Counties, Mississippi



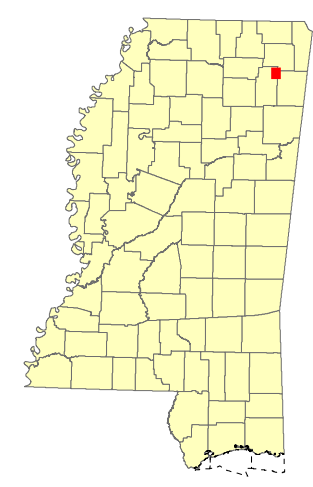
Geology by Ernest E. Russell, PhD  
and Darrel Schmitz, RPG  
Cross-Section by Darrel Schmitz, RPG  
and Jonathan R. Leard, GIT

2019

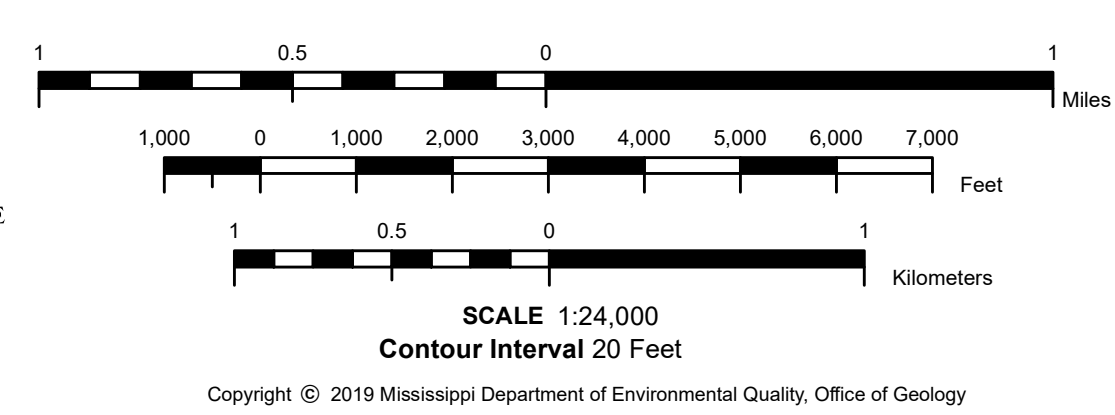
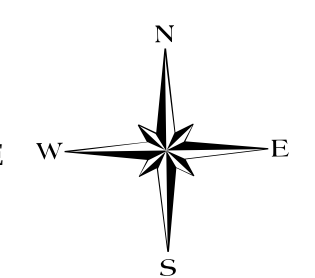
## DESCRIPTION OF MAP UNITS

QUATERNARY	HOLOCENE	Qa1	<b>ALLUVIUM</b> Floodplain deposits of clay, silt, and sand. Generally gray, yellowish-orange, orange, and tan. Approximately 25 feet thick along larger streams, thinning up tributaries.
		Q1	<b>TERRACE ALLUVIUM</b> Abandoned floodplain deposits of clay, silt, and sand generally yellowish-orange, orange, and tan. Approximately 25 feet thick adjacent to larger stream Alluvium or younger terrace deposits, thinning or non-existent up tributaries. Q1 - youngest and lowest in elevation of Terrace alluvium deposits. Q2 - second youngest in age and elevation of Terrace alluvium deposits. Q3 - third youngest in age and elevation of Terrace alluvium deposits. Q4 - fourth youngest in age and elevation of Terrace alluvium deposits that is more eroded and discontinuous. Q5 - fifth youngest in age and elevation of Terrace alluvium deposits. The older in age and higher in elevation Terrace alluvium deposits become increasingly eroded and discontinuous.
	PLEISTOCENE	Q2	
		Q3	
		Q4	
		Q5	
	UPPER CRETACEOUS	Selma Group	<b>DEMOPOLIS CHALK</b> Massive-bedded chalk and marly chalk. Medium to light gray and bluish-gray, weathers to tan. Contains subordinate amounts of pyrite, glauconite, and mica. Fossiliferous in many locations. Thickness ranges up to approximately 15 feet.
			<b>COFFEE SAND</b> Sand, buff, yellow, red-brown, light to dark gray, fine to medium-grained, glauconitic, with zones of silty sand and clay and occasional thin beds of concretionary sandstone layers. Fossiliferous in certain parts. The base of the Coffee Formation is questionably disconformable, almost impossible to differentiate on the basis of lithology from the underlying Tombigbee Member sands. The only evidence are phosphatic molds and general fossils in the basal Coffee not common to the Tombigbee. Thickness ranges up to approximately 170 feet.
		Km	<b>MOOREVILLE CHALK</b> Massive-bedded marly chalk and calcareous clay. Medium to light gray, and bluish-gray, weathers to tan. Locally sandy and contains subordinate amounts of glauconite. Fossiliferous in many locations. Conformable contact with overlying Coffee Sand. Thickness ranges up to approximately 80 feet.
	EUTAW GROUP	Eutaw Formation	<b>EUTAW FORMATION</b> <b>Ket</b> Tombigbee Member, Sand, Olive drab to light- to reddish-brown, light to dark gray, greenish-gray, fine-grained, massive, glauconitic, in part argillaceous, micaceous, somewhat calcareous, and fossiliferous. The base is conformable with the underlying portion of the Eutaw Formation. Sand, tan, yellow, brown, reddish-brown light to dark gray, greenish gray, glauconitic, fine to coarse grained, cross-bedded, with laminae of dark gray flaky clay, and stringers of small chert gravel, locally carbonaceous and locally fossiliferous. Thickness ranges from 20 to 30 feet. <b>Ke</b> The Eutaw Formation disconformably overlies the McShan Formation. Thickness ranges up to about 200 feet.

C0003  
● Drill Hole Locality and Identifier  
✕ Surface Mine

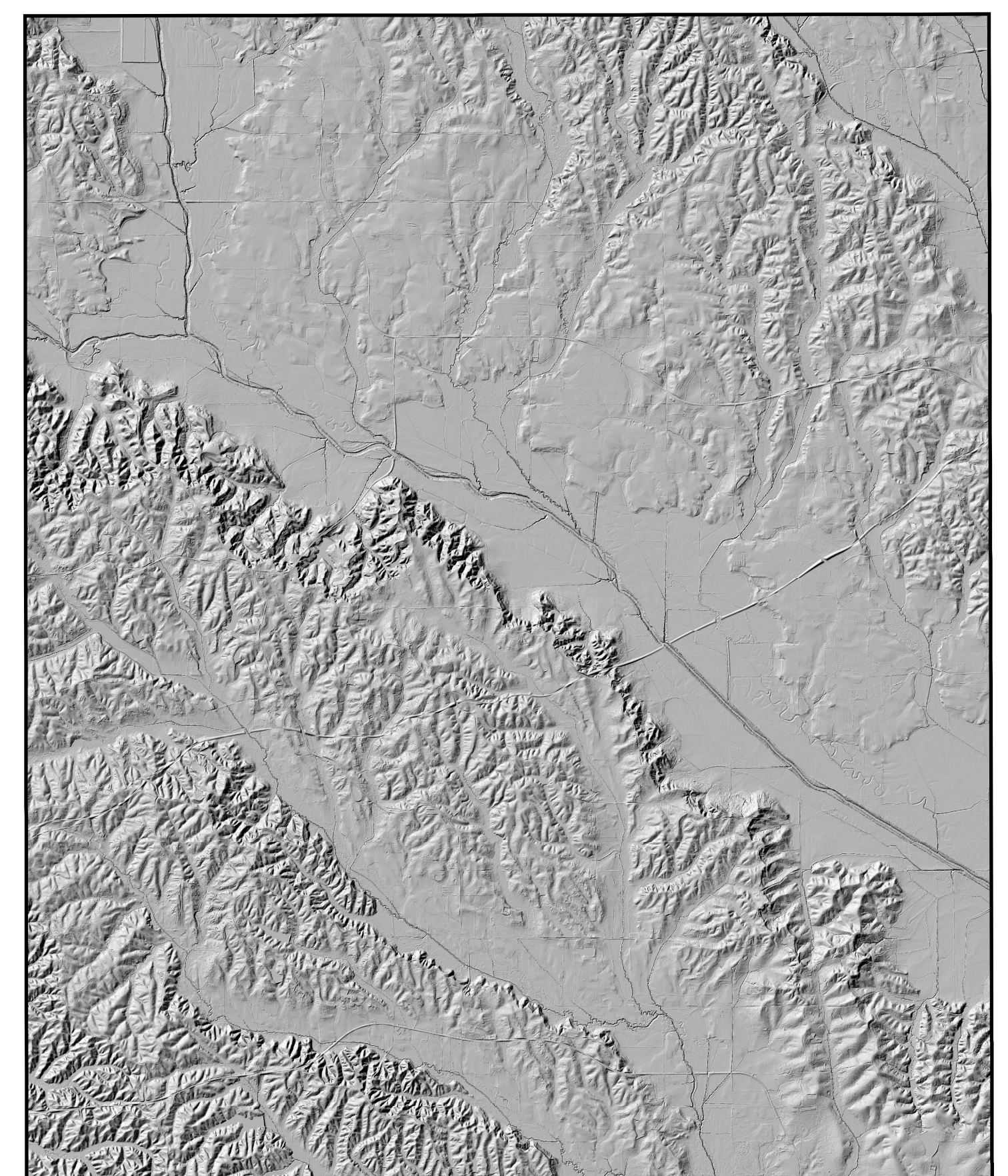
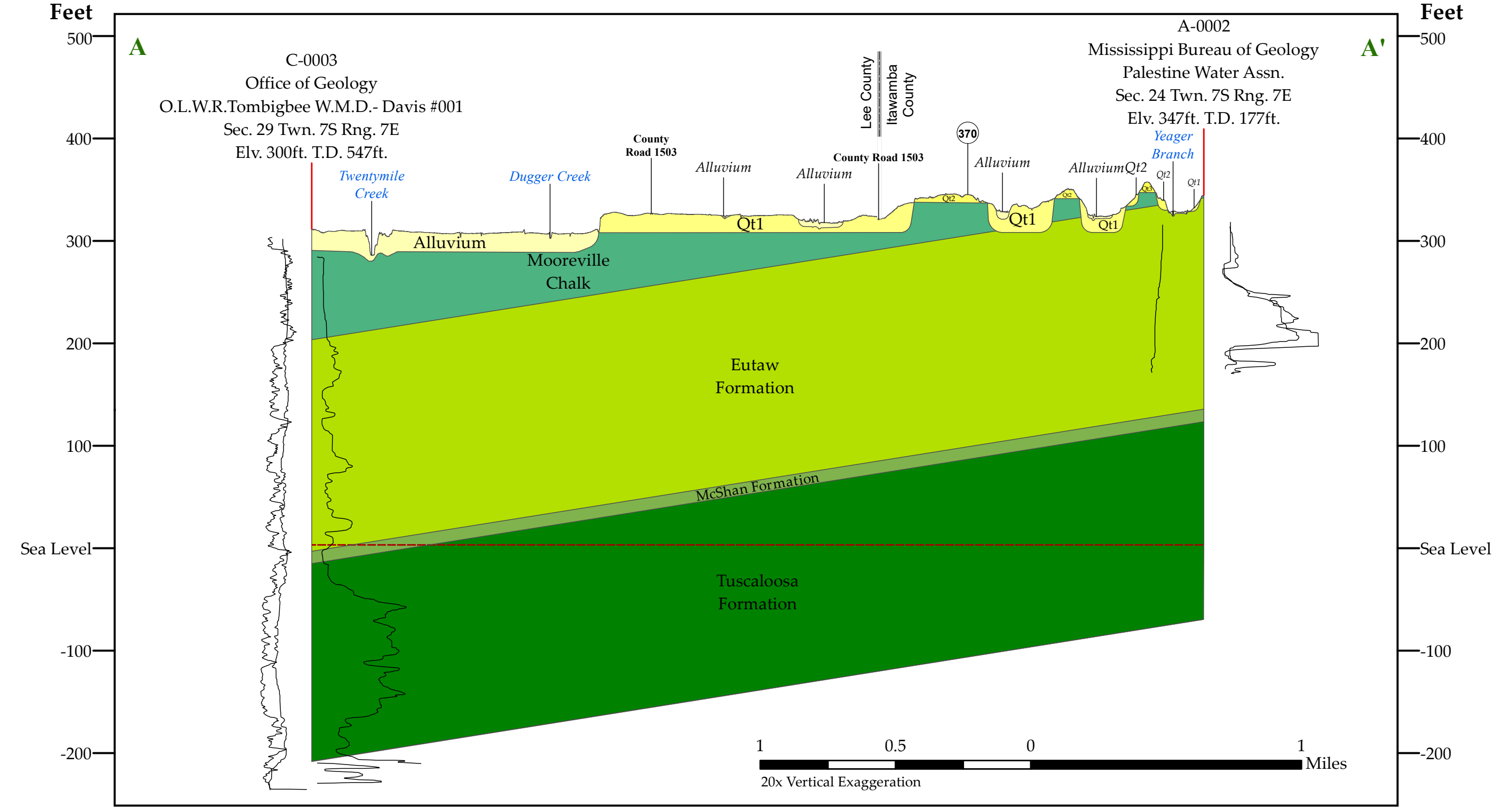


GEOLOGIC MAP  
RATLIFF QUADRANGLE  
Lee, Itawamba,  
and Prentiss Counties,  
Mississippi



Geology field checked in 1992, 1998, 2016, and 2017 using the 1973 U.S. Geological Survey 7.5-minute topographic quadrangle, Universal Transverse Mercator projection, 1927 North American datum, contour interval, 20 feet. Universal Transverse Mercator projection, 1983 North American datum, GRS80 spheroid, 1000-meter Universal Transverse Mercator 1983 datum grid ticks, zone 16, shown in red. October 2019 magnetic declination 2.48° W ± 0.34° changing by 0.07° W per year.  
Sources: Contours obtained from Mississippi Automated Resource Information System (MARIS), Public Land Survey System, 1:24,000 scale, railroad features, highway features, and hydrologic information from MARIS. We thank the National Park Service and Mississippi State University for their cooperation and for facilitating the data collection and fieldwork necessary for this mapping project. Public Land Survey System from MARIS, 1:24,000 scale. Lidar from Brad Segrest & Barbara Yassin of The Mississippi Department of Environmental Quality (MDEQ), Natural Resources Conservation Service, National Oceanic and Atmospheric Administration, United States Army Corps of Engineers, and MARIS. Building Footprint data is licensed by Microsoft under the Open Data Commons Open Database License (ODbL). Surface mine locations from MDEQ Office of Geology - Mining and Reclamation Division and USGS.  
Geographic Information System by Kate Grala, and Darrel W. Schmitz, Mississippi State University, and Jonathan R. Leard, GIT, MDEQ Office of Geology-Surface Mapping Division. MDEQ does not warrant the accuracy or completeness of the source data. Geologic maps are only a guide to current understanding and do not eliminate the need for detailed investigations of specific sites for specific purposes.  
Publishing Organization: This map was produced by the Mississippi Office of Geology in cooperation with Mississippi State University. This map was funded through a grant from the National Park Service.

## Structural Cross-Section of the Ratliff 7.5-Minute Geologic Quadrangle



2009-2018 Mississippi Statewide LIDAR-Generated DEM and Hill Shade